

## **REMARKS**

Applicant would first like to thank Examiner Vo for this examination.

Claims 9-19 are currently pending in the application. Claims 9-19 are provisionally rejected for nonstatutory double patenting as being unpatentable over claims 1-8 of co-pending Application No. 11/853,017. Claims 9-19 stand rejected under 35 USC 112, second paragraph as being indefinite. Claims 9-19 stand rejected under 35 USC 101 as claiming non-statutory subject matter.

## **PROVISIONAL CLAIM REJECTION – NONSTATUTORY DOUBLE PATENTING**

Claims 9-19 are provisionally rejected over claims 1-8 of co-pending Application No. 11/853,017. A terminal disclaimer is filed herewith, obviating this ground for rejection.

## **CLAIM REJECTIONS - 35 USC 112**

Claims 9-19 stand rejected under 35 USC 112, second paragraph as being indefinite. The Office Action is unclear.

As best understood, the Examiner appears to argue that it is not clear whether the length of the compressed versions of the software are the number of lines or the bit length. Applicants respectfully submit that the length of a compressed software component is well known in the art to mean its bit length. Kolmogorov complexity was defined in a 1965 paper by Andrei Kolmogorov as the length of a program in bits required to reproduce the original string. Software compression is a practical application of Kolmogorov complexity. Accordingly, the application is not indefinite as it would be clear to one of ordinary skill in the art that the length of the compressed program components would be their bit lengths.

If, alternatively, the Examiner is arguing that there is no support for the claimed features, Applicants respectfully disagree. The claimed features are supported as follows.

Claim 9 is directed to an apparatus for determining complexity of a software component, comprising:

logic (200 in Fig. 2; paragraphs {018} and {019}) for determining a plurality of versions of the software component (P0, P1, P2; paragraphs {013} e.g. removing comments, reformatting according to a stylistic standard - both are known utilities) and for finding lengths of compressed versions of the plurality of versions of the software (C0, C1, C2; paragraph {016} as explained above this is the bit length of each component or the total number of bits, which may be determined using known methods);

means for compressing each of the versions, to provide the compressed versions (210 in Fig. 2; paragraphs {015}, {018}, {019}; e.g., bzip2 compression program)

means for comparing the lengths of the compressed versions (220 in Fig 2; paragraphs {018}, {019}; e.g., a division utility); and

means for providing a software complexity metric comprising a comparison of the lengths of the compressed versions (paragraph {010}; e.g., stored to memory, printed, returned to another program, and the like).

### **CLAIM REJECTIONS - 35 USC 101**

Claims 9-19 stand rejected under 35 USC 101 as claiming non-statutory subject matter. The office action appears to argue that the apparatus of claims 9-11 and the program storage device of claims 12-19 merely programize a formula. The office action then argues that the claims fail to meet the tangible, concrete and practical results.

The Examiner appears to be applying the State Street test for a statutory process. Under State Street, a process is patentable if it produces “a useful, tangible and concrete result”. Applicants respectfully point out that the rejected claims are for an apparatus and program storage device, which are articles of manufacture not processes. Moreover, under Bilski, the State Street test is rejected and determination of whether or not processes are drawn to patentable subject matter is made by the machine-or-transformation test. The machine-or-transformation test is a two-branched inquiry; an applicant may show that a process claim satisfies § 101 either by showing that his claim is tied to a particular machine, or by showing that his claim transforms an article.

Applicant would like to respectfully point out that claims 9-11 are directed to an apparatus comprising logic. Logic is an article of manufacture comprising a processor, a series of discrete components, an integrated circuit, or the like. Applicant respectfully contends that the Office Action analysis is not appropriate for such apparatus. An apparatus comprising logic is a physical article of manufacture falling into the patentable category of manufactures under § 101 and should not be analyzed as a process. Moreover, as clearly indicated in the specification, this logic may be a processor such as a microprocessor, and may include internal memory {see para. 018}. As such, claims 9-11 are directed to an apparatus comprising logic performing stated functions on a software component.

Even if claims 9-11 were analyzed as a process, they meet the machine-or-transformation test of Bilski. First, the claims are tied to a particular machine, namely an apparatus comprising logic. Secondly, the claims claim a transformation, namely the creation of a metric for software complexity which is representative of characteristics of a software component and is useful in among other purposes: resource allocation, planning, scheduling, and cost estimation. As will be readily understood by those of ordinary skill in the art, this metric can be provided in various

useful tangible forms, including: a digital memory with the metric encoded thereon, a display or paper media with the metric visible thereon, a digital media with the metric encoded thereon.

Applicant would also like to respectfully point out that claims 12-19 are directed to a program storage device readable by machine, tangibly embodying a program of instructions executable by machine to perform method steps for determining complexity of a software component. Applicant respectfully contends that the Office Action analysis is not appropriate for a program storage device which is a product of manufacture and not a process.

Even if the claims in question were treated as methods as the Examiner suggests, Applicant respectfully contends that they meet the statutory requirements of section 101. In *Schrader* the Federal Circuit determined that section 101 required a process claim to have a transformation or reduction of subject matter and that data or signals may constitute subject matter. Claim 9 includes several transformations of subject matter. First, a plurality of versions of a software component are created. As specifically provided in the specification a normalized version of the software component may be created by, for example, removing comments, converting sequences of spaces into a single space, and sorting the remaining lines in lexicographic order. Alternatively, a normalized version of the software component may be created by reformatting the program text according to a stylistic standard. Similarly, a normalized unique version may be created by eliminating duplicate lines. Creating new versions of a software component clearly comprises a transformation of subject matter – the subject matter being the program text of the software component. The newly created version is something different than the original program text of the software component. Additionally, the step of compressing the versions of the software component is also a transformation, as the compressed versions are something different than the versions created in the previous step. Then, lengths of the compressed versions are determined, again producing something new. A length of a compressed version of a software component is different from the compressed version itself. Providing a software complexity metric comprising a comparison of the lengths of the compressed versions is yet another transformation. The software complexity metric is not a mere abstract idea, but a useful tool in the field of software development and testing for assessing the effort required for various operations pertaining to the software. Moreover, Applicant would like to respectfully point out that the metric is not merely a number, but a measure of a tangible thing, namely the complexity of a specific software component. Finally, presenting the complexity metric is another transformation, as the metric is being transformed from a signal in the logic to something tangible, concrete and useful – a presentation of the metric, such as a display or a transformation of a memory state.

With regard to the analysis of the Office Action, Applicant respectfully disagrees that Claims 9-19 are simply a formula or pure mathematics. In *Bilski* the Federal Circuit determined that section 101 required a process claim to be tied to a specific machine or to provide a transformation of subject matter. In *Schrader*, the Federal Circuit acknowledged that data or signals may constitute subject matter. In *Warmerdam* the Federal Circuit acknowledged that “if a claim requires more than the manipulation of ideas so that the process described in the claim

produces something quite different, then the process might indeed describe statutory subject matter. Claims 9-19 provide transformations and produce a metric which is a useful measure of the complexity of a software component and is quite different than the software component. A software component is transformed to another version, such as a normalized version or a normalized, unique version. The versions of the software component are transformed again by compression. The compressed software component is different from the uncompressed version.

The metrics are not determined by simply calculating a ratio. The claims must be taken as a whole. Accordingly, Applicants respectfully submit that claims 9-19 are directed to statutory subject matter because they are drawn to a statutory category - articles of manufacture. Moreover, even if they were treated as processes, they meet both branches of the Bilski test.

### **CONCLUSION**

In view of the amendments and arguments presented herein, Applicant respectfully contends that claims 9-19 are in condition for allowance. Accordingly, Applicant respectfully requests entry of the amendments, reconsideration and allowance of claims 9-19 and issuance of letters patent.

Sincerely,

  
Steven E. Bach  
Attorney for the Applicant  
Reg. No. 46,530